

## **The September 30, 2018 SET Postmortem/Debriefing**

### **Overview**

The KaroEcho Sept 30, 2018 SET was a great success. An exercise is not successful unless there are lessons to be learned and operators willing to risk making mistakes and learn from their mistakes. As we all know if you are afraid of making a mistakes, you will never succeed.

In general, since this was only a 2 hour SET (a half SET) our message rate was very good despite many mechanical failures at the 146.415 MHz mobile EOC station. Whom only the NCS could hear. In contrast the 147.450 MHz mobile EOC station was full quieting in most locations.

We improved our ability to relay messages, send and receive messages, operate under a controlled net, discover RF propagation rough spots, and in in short met all our objectives testing and improving:

Our ability to communicate across Kensington and El Cerrito via 2m simplex using a variety of methods such as HTs, portable external antennas, stations, mobiles, and base stations.

Our ability to utilize emergency power systems for sustained durations.

Our ability to efficiently activate and be dispatched to designated sites.

Our efficiency to change frequencies and act as a relay station between two stations.

How to efficiently operate in a directed net utilizing “best use” operating procedures

Improve our efficient (accurate and speedy) message handling abilities

The identification of RF dead spots and our ability to act as relays

### **Mechanical/Equipment Failure**

One critical factor is having a reliable radio and antenna at the hotspots (in this case the mobile EOC and EC9 ICP). There was an obvious mechanical breakdown at the EOC mobile station on 146.415 as no one except NCS could hear him. His counterpart at the mobile EOC 147.450 MHz frequency was heard strongly by all. Also there were multiple radio failures at EC9 IC. The radios are now being debugged.

We learned that in the advent of equipment breakdown in extremely high volume hubs a backup station should be dispatched by the EC or the AEC. If no spare mobile/portable station is available, then an operator from a low volume hub should be reassigned to the high volume hub. The two high volume stations (EC9 and the EOC) should always be moved off the net frequency to pass their traffic; otherwise the entire net becomes locked.

### **The Message Center**

If traffic is NOT BUSY (low traffic conditions) the GMRS/FRS operator, ham operator, message center manager, and scribe can be the same person, as any op who has been deployed to a low traffic assignment will testify; for example a shelter that was never

utilized, a CERT area that was only marginally affected, a Salvation Army Mobile Canteen that was lightly utilized, a medical clinic whose services were not needed, a shadow to a public official who was underutilized, etc. In such cases bring a book to read.

In moderate traffic situations we can physically separate these functions as needed (or use headsets and speaker mikes). But this will require additional scribes, runners, and more work for the message center manager. In frantic heavy traffic situations use headsets, ear phones, speaker mics and if necessary separate the FRS/GMRS station from the Ham radio station but not “too much”. Let the message center manager decide where the messages go.

In heavy traffic situations one must isolate the CERT AREA IC but provide a shadow or a runner. In all situations point to point tactical communications is the most efficient, and should supersede formal written traffic. That is, if the CERT AREA IC is not isolated and thus is able to handle real time point to point tactical comms, then arrange for the possibility for point to point tactical comms.

One large logistic lesson that was learned at the EC9 ICP was the co-location of the information/signup table, the Resource/Volunteer Coordinator table, and the Incident Commander location were too closely located with the Comms Message Center. The message center should be accessible to the IC, but far away from the information, assignments, and check-in stations in order to avoid the cacophony at the message center. Radios will attract the curious seeking information especially in a real disaster. They must be asked to leave the area (assertively if necessary) or the area must be taped off. The message center manager or ham should ask the Volunteer Resources Director for a "doorman/bouncer type as their assistant. This was something I had failed to articulate previously. Natalie did yeoman's duty in that organized chaos. Phil filled out the IC-309 forms for the FRS/GMRS side. All messages coming from the blocks must first go to the IC or the IC's designated assistant first before being reformatted and directed to the EOC. Scribes and runners are to be recruited from the volunteer resources coordinator.

**Natalie, KM6UCF, will present her Report as Message Center Manager at EC9 at the Oct. 8th KAROECHO Meeting if we are allowed time.**

### **FRS/GMRS**

At the message center (be it simply a single ham with a HT, a dual band ham base station operation, a GMRS/FRS station, scribe, and runner), it is essential to create an avenue that inter-connects the blocks to the CERT AREA IC. Incoming FRS Intra-AREA traffic will be directed to the CERT AREA IC, to the IC's designated assistant, to the Triage, SAR, and Fire Suppression coordinators as appointed by the message center manager. Likewise traffic from the CERT AREA IC goes back to blocks via the FRS/GMRS radio system.

GMRS INTER-AREA traffic and GMRS/EOC traffic is a definite future possibility that we have been working on. In fact, EC 1 ICP made contact from Arlington Park with a HT and extended rubber duck with EC9 ICP on GMRS Channel 7 during the drill. Traffic was hot

and heavy on channel 7.

**Rob, K6RJM, who was FRS/GMRS NCS will give his report at the Oct 8 KAROECHO Meeting if we are allowed time. (see below)**

### **Net Operations**

KE6BEE, Howdy, did an amazing job as NCS. As we all know the two crucial stations EC9 and the EOC on 146.415 had technical problems. It was my inability due to an unexpected medical emergency not to check out the two Kenwood TM-741a radios that were recovered from the El Cerrito Senior Center and the Tassajara Park Clubhouse that failed. The failure of the EOC radio on 146.415 slowed down the efficiency of the net considerably; but was handled adroitly by Howdy.

**KE6BEE, Howdy, will give his report Ham radio Net Operations at the Oct. 8 KAROECHO Meeting if we are allowed time. (see below)**

### **Message Handling Procedures**

Practice, practice, and practice continues. We all have heard this before do your thinking out loud off the air and release the PTT button when making decisions. Frequent umms, uhhhs, and hmmms indicate wasted band space (as well as battery power). Release, release, release.

One common difficulty was the unfamiliarity with the KaroEcho Hybrid 213 form, which is more complex than the standard ICS-213; but much more valuable than the FEMA ICS-213 office memo form. All in all, KaroEcho ops did very well. The Hybrid KaroEcho ARES form integrates all of the key elements of the standard ICS-213; but does two things different.

#1 it puts the FROM field at the bottom (where the signature should be) and

#2 it adds a header and footer.

We will continue to train in both these forms, but if you know the KaroEcho Hybrid form, you will also know the ICS-213 form and much more. The main point of confusion was the time date of the header and the time date on the ICS-213 form. They can be very different. The SUBJECT line is the time the originator (perhaps an IC, a first responder, a Red Cross official, etc) writes the message. Ideally that message reaches the radio op quickly and is sent; but unfortunately that is not often the case. When the radio op receives the message, he fills out the header and the new time date will differ (unless it is handed to him instantaneously). The radio op does not change the SUBJECT LINE time/date data. Then the radio op will try to pass the message; but what if the net is jammed up? It may be delayed another hour or day or a lifetime, more or less. The time filed however doesn't change because we want to know if the message was delayed getting to the radio op from the originator, or was it delayed by network congestion. Notice it is in the footer that the radio op puts records the actual time/date the message was sent and to whom. If however, you are the receiving station mark when you received the message and from whom in the footer. In the header and footer use FCC Callsigns while you may use the tactical callsign in the header's location field. We use the header and footer for prioritization purposes, fidelity,

traceability, and serviceability.

Another item worth commenting upon was the use of X (voiced XRAY). X denotes a separation. It can stand for period, comma, hyphen, colon, semi-colon, etc. Just send Xray (written as X). This is SOP. Periods such as found in email or internet addresses or holding decimal places voice it as "dot" but write it as a period. Similarity forward leaning slashes, backward leaning slashes, or other critical punctuations should be voiced as "forward slash, backward slash, hyphen", etc. when essential to the meaning of the message. and prefaced with the proword, as "Mixed Group"

As a separator XRAY is never sent at the end of the text body; because no separator is needed. Just voice: "Break" or "End of Text" neither of which needs to be written down by the receiving station. Remember in our case, punctuation is there to clarify, but not create perfect grammar.

Remember to use 5 word groups, then drop the PTT button for at least 1 second. If the receiving station doesn't say, "faster, slower, standby," etc. just continue at your pace. 5 word groups per line also greatly facilitates an easy and almost instant word check.

After going over the sent and received messages, I have identified where common misunderstandings have arisen; and where we can focus on message handling practice in the future. Remember your CERT training! The Fire Department will be extremely busy and we are trained to be as self-reliant as possible. Instead of focusing on messages sent to and from the EOC asking for help. Let us focus more on messages aimed at mutual aid between CERT areas and other local resources.

**Questions, sharing, and comments on message handling and operating procedures, please bring to the critique/debriefing on Monday Oct 8 or send to [ni6a@arrl.net](mailto:ni6a@arrl.net)**

### **Terrain and Propagation**

El Cerrito/Kensington has its own unique topographical characteristic which is indeed challenging. I think it is safe to say that HT rubber duck operation would not work unless we have a repeater. So let's dispel that long standing myth. Without a repeater we will need portable and/or mobile stations with gain antennas depending on location. In some locations you will need more than 5 watts. Even then relays will be needed. So let's train in such contingencies. What can make this work are emergency powered base stations in good locations with high gain antennas and high power. However, nothing will happen if we do not reach out to more operators who can man the CERT AREA ICPs, shelters, and EOC 24/7. Radio waves can and do bend and they also can bounce according to frequency band characteristics. Yes, this is a fascinating topic and worth a training session in the future.

### **Need to Reach Out for More Operators**

The test proved what many of us already have asserted, i.e., that if we want to do the job, we

need to address reaching out to new operators and train them. Peter KJ6DYX (Ken 5) stood up unexpectedly and helped considerably; but we only had KK6GIO, KC6OBK, and K6KOP manning the rest of Kensington. Marian and Jerry were using commercial power and base stations. KK6GIO did double duty as K1 and K2. Marian as K3, Peter K5, and Jerry (K6KOP) acted as relay.

Similarly, we must address the fact that in El Cerrito only KK6SRD, KM6HBO, NI6A, and KE6BEE (NCS) on 2m as local ops. Natalie KM6UCF, was message center manager and Rob, K6RJM, was EC9 GMRS/FRS NCS. All the rest were mutual aid volunteers from Richmond. Thanks to KJ6WSS, KK6ZPM, KJ6DJ, and KK6UQX.

We did not utilize ham members Hal, Mike, Marlene, Aaron, and Kevin who were present; but were providing vital non-radio CERT functions during the SET.

Since this was our first SET since 2015, we need to stoke the local volunteer spirit. The only solution is a more **aggressive outreach program** and publicity. An El Cerrito based ham cram and license test is being scheduled for 2019.

#### **Future Projects Identified:**

Message handling practice and message center training  
Reach-out (Ham Crams, Licensing, Mailings, and PR)  
GMRS Parallel Network/Repeaters or antenna installations  
Packet Digital Parallel Network (store and forward)  
Net operation procedures

Closing note: FEMA most often will not be able to take control over a local disaster during the first 48 or 72 hours (depending on many factors). So too the National Red Cross in unexpected but widespread disasters (such as earthquakes) may take longer to arrive. Thus, we will be on our own unless normal conventional power and comms are restored promptly. Our focus as a community disaster preparedness organization is to attempt to serve our community's disaster communications needs in the most self-reliant and sustainable manner possible. Our community will be dependent upon radio and runner systems exclusively, pertaining to intra-area comms, inter-area comms, comms to the El Cerrito EOC, shelters, feeding stations, County OES, food sources, State OES, medical centers/hospital nets, etc. for at least 48 hours. Given present resources, "Sustainable Self-Reliance" is the goal.

Thanks to participants:

KJ6DYX, KK6GIO, KC6OBK, K6KOP, KK6SRD, KM6HBO, NI6A, KE6BEE, KJ6WSS, KK6ZPM, KJ6DJ, KK6UQX, KM6UCF, K6RJM, KM6CXI, KM6UBZ, KK6NDH, and KI6KNP who put in a great deal of effort and care in order to help us as a community become better prepared. Congratulations it was a great pleasure and honor working with you all!

Don, NI6A

## **Addendums: FRS/GMRS Report (K6RJM) and Net Control's Report (KE6BEE)**

### **FRS / GMRS Report for EC9 CERT Drill, Sep 30, 2018**

**Rob McNicholas, WQTP332, K6RJM**

#### **Overview**

Rob ran the FRS/GMRS net on channel 7. Equipment was an BTech GMRS-V1 running at 5 watts, wideband, with an external GMRS antenna provided by NI6A. Teams at Medical Triage (Maya) and Search and Rescue Teams 1-7 were issued FRS radios. Net control operated from a table next to the Tassajara clubhouse, with Phil Machell recording a summary of all traffic on ICS-309 forms and Natalie, KM6UCF, as Message Center manager. Jamuel KM6HBO was operating 2m at the next table.

FRS radios were given to novices who had not used them before. When reporting in, they did not have pre-formatted ICS-213 messages, but just said things like "There is a collapsed building at Tassajara and Barrett" or "We need more triage help at the triage area." Phil recorded a summary of ALL traffic on the 309 form and assigned each a number to each message, even those that did not generate an ICS-213, while Rob also jotted down notes about each call. This was necessary as the traffic was coming in fast enough that there was no hope of responding / relaying each message in real-time. For messages that were deemed to require outside help (e.g. a fire, building collapse, or urgent medical transport) we asked Natalie to transcribe onto an ICS-213 and hand it off to Jamuel. These messages were given the number from the ICS-309.

#### **Issues / Problems / Observations**

Some FRS radios had dead batteries.

Some FRS Radios had privacy/interference codes enabled.

½ Watt FRS radios had limited range.

FRS radio teams did not know how to use radios (i.e. listen before transmitting) which resulted in some interference.

When IC was not at radio table, there was occasional confusion on what to do with certain messages.

When S&R teams were initially dispersed, traffic was high because they all reached their goals simultaneously.

#### **Suggestions for Improvement**

Create a brief radio tutorial that can be handed out with radios to inexperienced radio operators. (Rob has sample)

Create a "cheat sheet" for Message Center supervisor about where to direct certain kinds of messages. (i.e. Lost Child = law enforcement, fire = EOC, etc)

Encourage Block Captains to encourage purchase of 2-watt FRS radios and practice with them at any neighborhood drills.

Encourage purchase of GMRS license for all ACs and purchase of 5-watt or higher GMRS

radio.

A second GMRS operator at the ICP would have been helpful for increasing bandwidth during busy times.

Keep spare batteries & radios on hand.

### **Debriefing from Howdy, KE6BEE (Net Control Station)**

Because NCS ended up being the only station that could provide relay assistance to the high traffic volume from EC9 to EOC (as well as EC1 to EC7, and K1 to EOC), there was an unusual amount of time spent passing messages on the resource net frequency. In most cases the communication problems were severe only in one directional, and the receiving station usually copied the sending station, but not vice versa, so the NCS relay was only needed for flow control and passing fill requests. This saved a lot of time compared to the case where the entire message needed to be repeated by the relay station. Still, without some of the radio equipment problems, and with additional viable relay stations, it should have been possible to direct more traffic off frequency, as intended, to keep the net open for contacts from additional stations. Under the less than ideal circumstances, we did manage to achieve reasonable message throughput, but this success was partly a result of most traffic passing through two stations (and NCS) while the other stations were relatively few and quite patient, rather than trying to pass their traffic "as it happened." For this reason, it might be better to prepare future SET exercises with a timed series of messages from numerous stations at once, that more accurately represents the traffic conflict that is likely to develop in an emergency. Even though it is great that our operators are very courteous, perhaps we need to give operators the "permission" to more assertively jump in during other traffic to force NCS to manage a lot of requests at once. After the initial acknowledgement by NCS, the contact station should provide a concise request, such as message transmission to a particular end point, so NCS knows how to route the traffic and which station to prepare for receipt. Occasionally, a station would jump into sending their message without first letting NCS setup the contact elsewhere (probably because it was assumed everything went to EOC). The few messages that were passed on a secondary frequency appeared to go smoothly (at least from the standpoint of NCS that didn't hear them), but we still experienced significant delay if a station wasn't prepared to switch to a frequency that wasn't already programmed into a radio. There was also confusion about formatting/content of different forms that slowed things down a little, so we could do better on standardizing the expected form and confirming that the same form is being used on both sides of the transmission (as well as familiarity with how to use it properly). Even though the connection to a CERT exercise was helpful, it tended to skew the traffic load and took away possible ham operators who were focused on CERT roles, so KARO/ECHO should probably consider doing a ham only SET to have enough operators to populate each assembly area and have a more robust net. Using the actual EOC radio hardware is also an important test. Increasing the receive capacity at the EOC was very helpful, so we still might want to deploy additional mobile stations outside the EOC to be able to deliver additional messages with runners? In fact, with enough

operators, we could even consider having NCS move some mobile stations around as a response to double up capacity when there is heavy traffic demand (representing an acute event) at a particular locations that might then move to follow the demand somewhere else, as circumstances change.

~ KE6BEE, NCS, KaroEcho Sept. 30, 2018 SET

**From Natalie, KM6UCF, Message Center Manager**

(My Note: Natalie is a new ham and was put in a hotspot, which she performed admirably despite the fact that Don, NI6A, was out of town and failed to provide a job description).

Natalie's post-mortem comments:

The cacophony! GMRS and Ham operations were close to each other, with radios going full blast.

Tables could be further apart

People could be advised to lower radio volume and/or

People could be encouraged to use headsets/earphones, though at some points, overhearing the calls was useful.

Interruptions. People came to the tables out of curiosity, or thinking that it was the signup table, or simply ended up having conversations right in front of the tables, which added to the cacophony and (occasionally) chaotic atmosphere. It would be good to have tables in less noticeable locations, and perhaps even have signage requesting that people not interrupt unnecessarily.

GMRS traffic was the most active and chaotic. I believe the scribe mostly wrote messages on a log, rather than the ICS forms. I was asked to complete ICS forms a couple of times for messages from the GMRS side, and each time was delayed in delivering the message to the Ham because I needed to get the message number, which the scribe was assigning.

Frankly, though, it seemed more efficient to be noting messages on a log rather than completing the ICS forms. In a real emergency, it would be torture to laboriously complete the ICS forms, though I hear that emergency personnel insists on this.

I \*think\* there were a lot of GMRS messages that were never relayed to EOC; I don't know what they were. Perhaps they were communications among the GMRS folks that didn't need to go to EOC, but I'm not sure. It would be interesting to know what was going on there.

My role continued to be vague and I felt underutilized. There were times when everyone was madly trying to get messages written or conveyed, and I was just sitting there. It felt like I would have been better utilized as an additional scribe for the GMRS side, which was so busy; if each scribe had a bank of message numbers (*e.g.*, 1-100 for me, 101-200 for the other person), we could have alternated taking notes from Rob and freely assigned message numbers.

The ICS form has a minor flaw: The date and time are in reverse order between the top of the form and the body. It would be easier if they were consistent.

Overall, I thought it was an extremely useful exercise, and everyone did their best to be collaborative and make sense of it all. Rob did a great job, as did the other radio volunteers

and Mike. It was particularly helpful for me to listen to the messages be conveyed to Net Control. I really need to learn the alphabet words!

**KM6CXI, Mike Stuart's (CERT Area Coordinator for EC9, detailed debriefing.**

HYPERLINK "https://docs.google.com/document/d/1-GBzf\_NMITxuUjQ-pvkVBDQ1mTyibxnYsbNqWr42CUo/edit#" [https://docs.google.com/document/d/1-GBzf\\_NMITxuUjQ-pvkVBDQ1mTyibxnYsbNqWr42CUo/edit#](https://docs.google.com/document/d/1-GBzf_NMITxuUjQ-pvkVBDQ1mTyibxnYsbNqWr42CUo/edit#)

Link here to the **minutes of the October 8, 2018 KaroEcho Meeting** which was dedicated to the Critique of the September 30, SET

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